

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2004/001545

International filing date (day/month/year)
08.04.2004

Priority date (day/month/year)
17.04.2003

International Patent Classification (IPC) or both national classification and IPC
G06T7/00

Applicant
THE UNIVERSITY OF DUNDEE

1 This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	8,11-14,25,28-30,32
	No: Claims	1-7,9,10,15-24,26,27,33-37
Inventive step (IS)	Yes: Claims	8,11-14,25,28-30,32
	No: Claims	1-7,9,10,15-24,26,27,33-37
Industrial applicability (IA)	Yes: Claims	1-30,32-37
	No: Claims	

2. Citations and explanations

see separate sheet

Re. item V:

1. Reference is made to the following document:

D1: IOFFE S ET AL: "Human tracking with mixtures of trees" CONFERENCE PROCEEDINGS ARTICLE, vol. 1, 7 July 2001 (2001-07-07), pages 690-695, XP010554049

Clarity:

2. The application does not meet the requirements of Article 6 PCT, because claims 1, 7, 21, 23, 24, 30, 32, 33 and 35 - 37 are not clear.
 - 2.1. Re. independent claims 1 and 16: It is unintelligible what *applying* templates to an area of interest means. Although dependent claims 5 and 22 provide the necessary information, the questionable expression is not clear from claims 1 and 16 alone, respectively, as stipulated in Article 6 PCT.
 - 2.2. Re. independent claims 35 - 37: Since claim 35 is directed to a program on the one hand and since this program is embodied on a medium on the other hand, the category of this claim is not clear leaving the choice between a program and a computer program product as arguable alternatives. As a consequence, it is not clear either whether claim 35 should be counted as independent (computer program product) or dependent (program). The option of a program is already covered by claim 34 thus causing claim 35 to violate Article 6 PCT due to lack of conciseness. The option of a computer program product equally renders one of claims 35 and 36 superfluous, thereby inducing lack of conciseness as well. Contrary to the requirements of conciseness as set out in Article 6 PCT, dependent claim 37 is superfluous, since it contains all the features of independent claim 16 together with dependent claim 17.
 - 2.3. Re. dependent claims 7, 23 and 24: "The probabilistic region mask" of claims 7 and 24 has an antecedent only in preceding claims 6 and 23, respectively. However, claims 7 and 24 refer to "any preceding claim" and "Claims 16 to 22", respectively.

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"The body" in claims 23 lacks an antecedent in claims 16 to 22.

- 2.4. Re. dependent claims 21, 30 and 33: Although claims 21 and 33 are directed to methods, they refer back to systems (claims 16 to 20 and claims 16 to 32, respectively). Likewise, claim 30 refers back to "any preceding claim" as a system although only preceding claims 16 - 29 are systems.
- 2.5. Re. dependent claims 32, 33 and 37: Claim 32 refers to non-existent claim 31. Likewise, claims 33 and 37 incorrectly imply the existence of an antecedent claim numbered 31.

Novelty:

3. The present application does not meet the requirements of Article 33(2) PCT, because the subject matter of claims 1 - 7, 9, 10, 15 - 24, 26, 27 and 33 - 37 is not new.
- 3.1. Re. independent claims 1, 16 and 34 - 36: Document **D1** discloses (references in parentheses referring to this document):
"A method [...] comprising the steps of:
creating a set of templates [...] (sections "2. Modeling with trees", "6.1. Detecting body parts")
and applying said template to an area of interest [...] (sections "2. Modeling with trees", "6.1. Detecting body parts");
analyse image pixels in the area of interest to determine the probability that it contains the object part (section "2. Modeling with trees");
applying other templates [...] to determine the probability that said area of interest belongs to a corresponding object part (sections "2. Modeling with trees", "6.1. Detecting body parts")
and arranging the templates in a configuration; calculating the likelihood that the configuration represents an object or structured parts of an object (sections "1. Introduction", "2. Modeling with trees");
and calculating other configurations and comparing said configurations to determine the configuration that is most likely to represent an object or structured part of an

object (section "1. Introduction", "2. Modeling with trees")."

This is the exact (shortened) wording of independent method claim 1. The same reasoning applies mutatis mutandis to independent system claim 16, program claim 34, program (product) claim 35 and program product claim 36.

3.2. Re. dependent claims 2 - 6, 9, 10, 15, 17 - 24, 26, 27, 33 and 34: The following additional features are also disclosed in **D1** (references in parentheses referring to this document):

- claims 2, 20: probability from transform (section "6.1. Detecting body parts")
- claims 3, 19: dissimilarity (implicit in section "6.1. Detecting body parts")
- claims 4, 21: likelihood from dissimilarity (implicit in section "6.1. Detecting body parts")
- claims 5, 22: pose alignment (section "6.1. Detecting body parts")
- claims 6, 23: probabilistic region mask (section "6.1. Detecting body parts")
- claims 7, 24: region mask from training / segmentation (section "6.2. Modeling the body")
- claims 9, 26: product of likelihood ratios (section "3. Learning a tree model")
- claims 10, 27: determine spatial relationship (section "1. Introduction")
- claims 15, 33: human or animal body (sections "1. Introduction", "2. Modeling with trees")
- claims 17, 37: imaging means (section "6. Tracking")
- claim 18: stills or video camera (section "6. Tracking")

Further remarks:

4. According to Rule 6.2(b) PCT and the Guidelines, 5.11, claims should only contain reference signs in parentheses if the latter refer to the drawings. This provision is not met in view of the expression "(in 2D or 3D)" in claim 22.
In the same context, the features of none of the claims are provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
5. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the document **D1** is neither identified in the description, nor is the relevant background art disclosed therein briefly discussed.

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